Fig: 1.

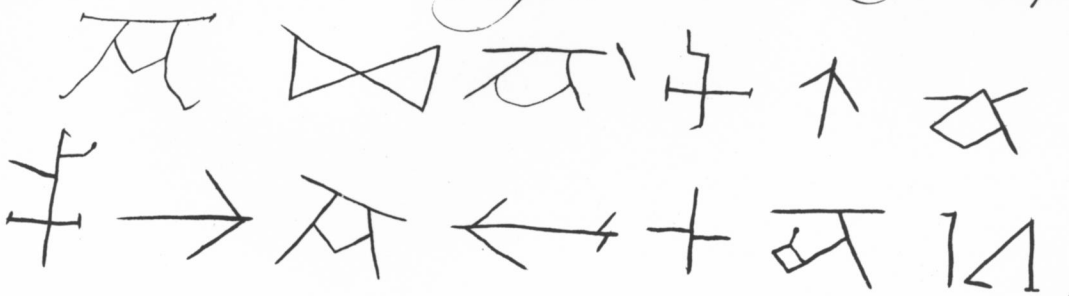


Fig: 2.

Fig: 3.

Fig: 4.

Fig: 1. Philosoph. Transact. Numb. 335.

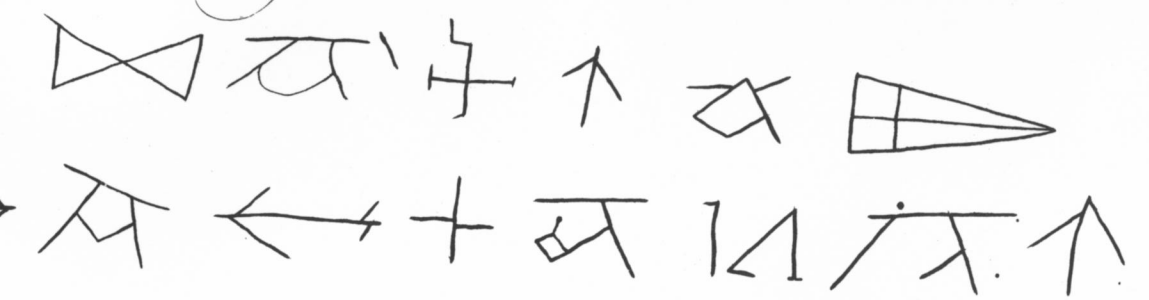


Fig: 2.

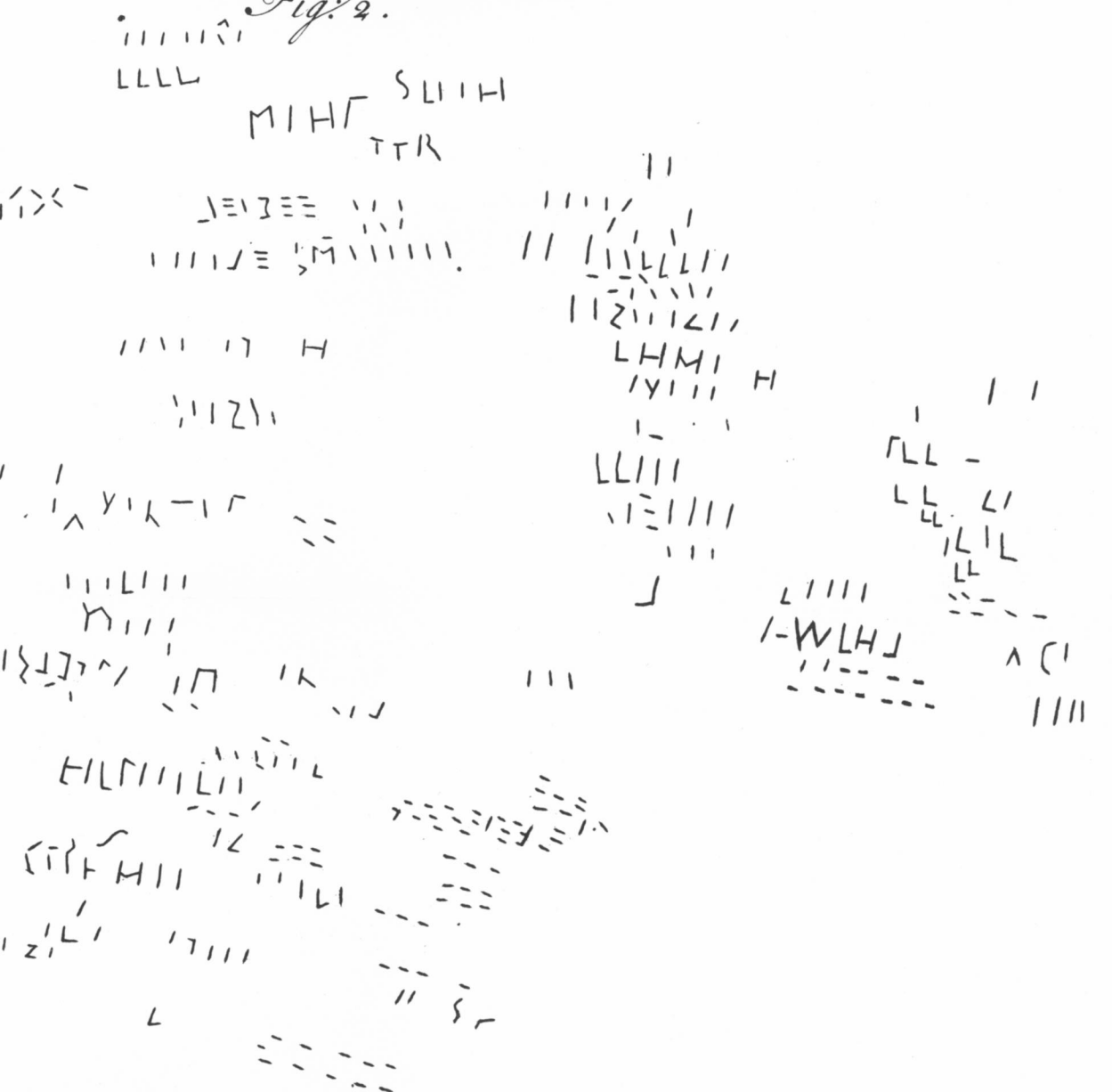


Fig: 2.

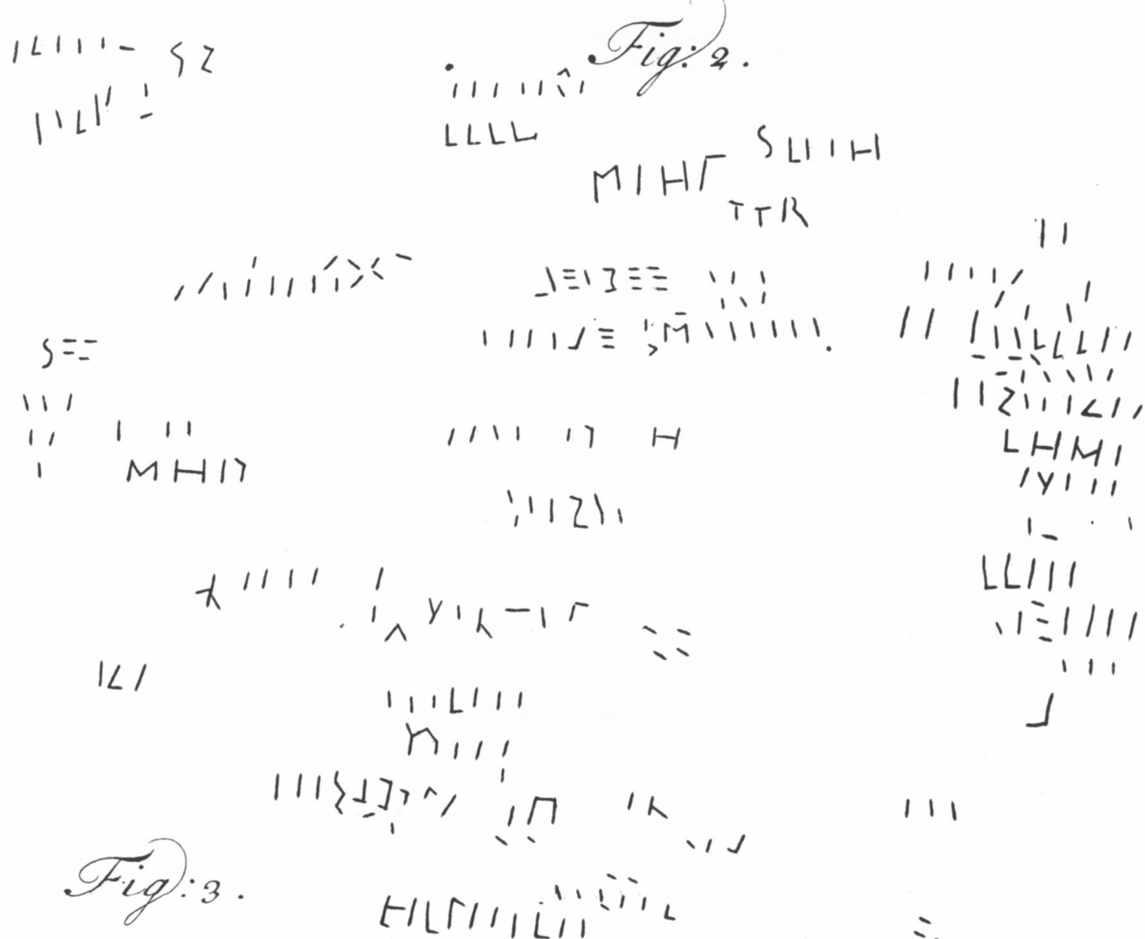


Fig: 3.

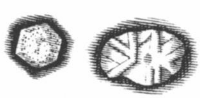


Fig: 4.

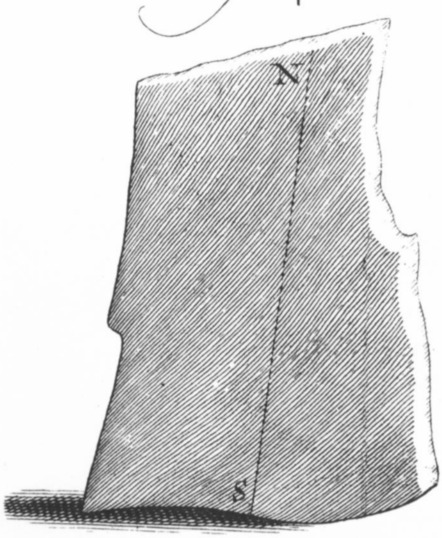
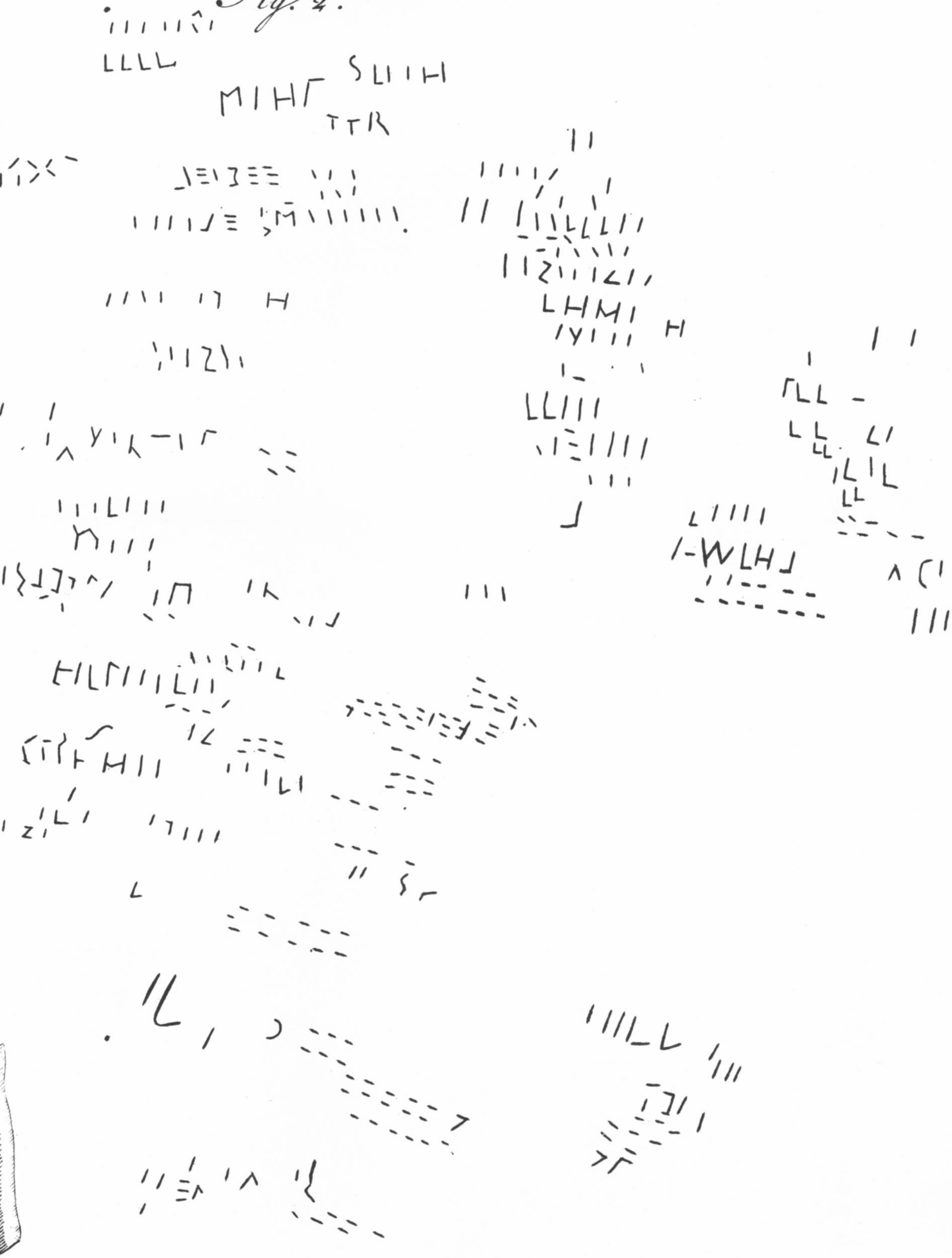


Fig: 2.



the Plow: So we made an eaſy Purchaſe of about a dozen ancient Manuſcripts on Parchment.

As to your Queries: The *Mackinboy* is the *Tithymalus Hibernicus* (or *latifolius ſylvaticus*) *Cat. Hort. Oxon.* Their *Shamrug* is the common Clover. The *Potato* is not indigenous of *Ireland*. The *Arbutus* is, for what I can yet underſtand, the ſame with the Common: And for the *Sabina*, I doubt my Friend I ſent to *Kerri* (whom I have not yet ſeen) will bring me no News of it.

I have the Account of the living Foſſil Muſcles atteſted and ſigned by the four Perſons preſent at the finding them; ſo that nothing but its being a ſingular Inſtance makes me ſcruple the Relation. But the Labourers have ſuch a Character for Veracity, that I rather incline to believe it, than to doubt. I am,

Honoured Sir,

Your moſt obliged Servant,

E. LHWYD

V. *An Account of Experiments concerning the Proportion of the Power of the Load-ſtone at different Diſtances.* By *Mr.* Fr. Hauksbee, *F. R. S.*

WIthout mentioning the many Difficulties that attend the making of Experiments of this Nature, I ſhall immediately give an Account of their Succeſs, and the manner of proceeding; which was as follows. I took a Quadrant of 4 Feet *Radius*; and having fix'd it to the Floor, in the Poſition of the Needle, whoſe South

South Point directed itſelf to no Degrees, I then fix'd a Board (likewiſe on the Floor) in a direct Angle from from the ſame, the Graduations on which Board were 3 Inches diſtant from each other. The Needle was ſuſpended on a Point ariſing from the Center of the Quadrant, from whence were meaſured the ſeveral Stations of the Magnet. The Magnet was laid on a thin piece of Board; under which to one ſide was nail'd a narrow ſlip of Wood, to ſlide it along the ſide of the fore-mention'd graduated Board, whereby the Stone might be always kept in the ſame Direction to the Needle. The Stone that I uſed weighed about ſix Pounds; was rough, and of an irregular Figure; yet I could diſcover no Inconveniency in the Experiment ariſing from the ſame, it being, and acting at all Diſtances in the ſame Poſition as it is firſt plac'd on the Board: And I ſee no reaſon to doubt, but the Proportions of its Power will be regular, and agreeable to the ſeveral Diſtances; as more than once I have obſerv'd. For when the Stone hath been differently poſited on the fore-mentioned thin board, different Angles of the Needle would enſue at the ſame Stations; yet their Proportions one to another would be nearly the ſame. My meaning is this: Suppoſe the Stone was ſo plac'd, as at 3 Inches from the Needle it would give the Needle an Angle of 90 Degrees, the Stone being continued in the ſame Direction at the ſeveral Stations, the Proportions of its Power one to another would be much the ſame, as if the Angle of the Needle at the firſt beginning made but 87, or even but 80 Degrees on the Quadrant; for upon a ſmall alteration of the Poles of the Stone, ſuch diverſity of Angles will ariſe.

In theſe Experiments I made uſe of two Needles; one of a *Radius* of 6 Inches, the other but of one Inch: Which laſt, after abundance of tryals, I found to be moſt accurate; beſides the Advantage it gave in begin-

ning the Experiment 6 Inches nearer the Stone than the other: And from two Feet diſtance from the ſame, it became nearly agreeable to the Angles made by the long Needle to all the farther Diſtances; as you will find by the following Tables, which were made with the ſeveral Needles in the ſame direction of the Stone. I meaſured the Angles by a Silk thread ſtrained directly over the Needle to that part of the Quadrant to which it was directed; which was the beſt way I could contrive to come neareſt the truth.

It may be obſerv'd from the following Tables, that the long Needle at 9 Inches from the Stone, made ſomewhat a larger Angle than the ſhort Needle at 3 Inches diſtance from the ſame; that the ſhort Needle at the diſtance of 9 Inches, made an Angle of 9 Degrees leſs than the long one at the ſame place. But this odds will eaſily be accounted for, if we conſider the diſproportions of the Needles lengths; for the Point of the long Needle at 9 Inches, was brought within an Inch as near the Stone, as the Point of the ſhort Needle was, when but 3 Inches diſtant from the ſame: The Point of the ſhort Needle at 9 Inches from the Stone, was 5 Inches farther from it, than the long one at the ſame Station. Theſe diſproportions being conſider'd, it is no wonder ſuch difference of Angles ſhould enſue upon the Uſe of the ſeveral Needles near the Stone; for at two Feet, and the farther diſtances, they become nearly agreeable, as I ſaid before. When I ſpeak of Diſtances from the Needle, I always mean from the Center of it.

Farther it is obſervable, that the Stone at 5 Feet diſtance from the Needle made an Angle of 2 Degrees with one, and with the other of two and a half; yet upon the abſence of the Stone they would return to no Degrees, as at firſt: Which plainly ſhews, that the Influence of the Stone extended farther; altho' Obſervations, at remoter Stations, could not eaſily be determined.

Ex-

Experiments by the ſhort Needle.

Diſtances of the Loadſtone from the Needle in Inches.	The ſeveral Angles of the Needle at the ſeveral Diſtances. D. ′	The differences compared one with another, at the ſeveral Obſervations, in Minutes.
3	87—00	180
6	84—00	330
9	78—30	570
12	69—00	735
15	56—45	795
18	43—30	630
21	33—00	540
24	24—00	360
27	18—00	270
30	13—30	150
33	11—00	135
36	8—45	105
39	7—00	90
42	5—30	60
45	4—30	40
48	3—50	30
51	3—20	20
54	3—00	15
57	2—45	15
60	2—30	00

Ex-

Experiments by the long Needle.

Diſtances of the Loadſtone from the Needle in Inches.	The ſeveral Angles of the Needle at the ſeveral Diſtances. D. /	The differences compared one with another, at the ſeveral Obſervations, in Minutes.
09	87—30	345
12	81—45	570
15	72—15	1135
18	53—20	1100
21	35—00	660
24	24—10	380
27	17—50	280
30	13—10	180
33	10—10	130
36	8—00	90
39	6—30	75
42	5—15	65
45	4—10	40
48	3—30	30
51	3—00	25
54	2—35	20
57	2—15	15
60	2—00	00

At greater Diſtances, and even the more remote in theſe Tables, the Power of the Stone is ſo weak, and the meaſuring the Angles at all times exactly ſo difficult, that 'tis well if we come ſometimes within 10 or 20 Minutes of Truth: The Correction of which I ſhall wholly leave to the Determination of ſuch Gentlemen, whoſe Province ſuch an Experiment as this moſt peculiarly belongs to.

A Deſcription of the Loadſtone made uſe of in the foregoing Experiments.

This Stone weighed exactly 6 Pound, one Ounce and $\frac{1}{4}$ Averdupois Weight. Its Form reſembled *Figure* 4. Its breadth at the North Pole was 4 Inches; at the South Pole 5 Inches; the Poles running thro' the Stone in the direction of the prick'd Line. The length of the ſhorteſt ſide was 6 Inches $\frac{1}{2}$, of the longeſt ſide 7 Inches $\frac{1}{2}$. Its thickneſs at the North Pole was one Inch and a half, and at the South Pole one Inch.

VI. *The Specifick Gravities of ſeveral Metalline Cubes, in compariſon with their like Bulks of Water. By Mr.* Fr. Hauskbee, *F. R. S.*

THeſe Cubes were deliver'd to me by Dr. *Sloane*, and ſuppoſed to be extraordinary in their ſeveral kinds, except the Gold. Their workmanſhip was very accurate; and they were exactly of a ſize, altho' they differ'd a little from our Meaſure. Six of them being laid on a Rule, Side by Side, meaſured about a tenth more than 6 Inches; and if their Sides were chang'd, they ſtill made the ſame meaſure. And it farther appeared that they were exact, by their agreeableneſs in the Weight of their reſpective Bulks of Water, as may be obſerved by comparing them in the following Table.

Troy